



**DATE:** July 13, 2017  
**TO:** PJM and PJM Stakeholders  
**FROM:** Joseph Bowring  
Independent Market Monitor for PJM  
**SUBJECT:** Market Monitor's Evaluation of Passed and Failed Fuel Cost Policies.

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As part of its responsibilities under PJM OATT Attachment M, the Market Monitor ("IMM") reviews all Market Sellers' Fuel Cost Policies to determine whether the level of cost-based offers or fuel cost inputs raises market power concerns. The IMM consults with Market Sellers in an attempt to come to agreement regarding the Fuel Cost Policies. The IMM passes or fails all Fuel Cost Policies.

Prior to May 15, 2017, PJM approved a number of Fuel Cost Policies that failed the IMM's evaluation. The IMM will continue to monitor cost-based offers for all PJM Market Sellers. The IMM may make referrals of some or all such Market Sellers.

## Background

On February 3, 2017, FERC accepted PJM's compliance filing regarding hourly offers and Fuel Cost Policies.<sup>1</sup> PJM's rules set standards for its Fuel Cost Policy approval and reserve to itself final authority for approving Fuel Cost Policies as compliant with its rules.<sup>2</sup>

All Market Sellers completed the Fuel Cost Policy review process by May 12, 2017. PJM approved every Fuel Cost Policy as compliant with the tariff. Of 479 approved Fuel Cost Policies, 457 (95 percent) passed the IMM's evaluation. The passed Fuel Cost Policies cover 89 percent of PJM generating units.<sup>3</sup>

The IMM performed a detailed review of every Fuel Cost Policy. PJM approved every Fuel Cost Policy that passed the IMM's evaluation. In most cases, PJM approved the policies that

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<sup>1</sup> *PJM Interconnection, L.L.C.*, 158 FERC ¶ 61,133 (2017) ("February 3<sup>rd</sup> Order").

<sup>2</sup> Prior to this order, only the IMM reviewed Fuel Cost Policies, and only the IMM had standards for Fuel Cost Policies. PJM deemed Fuel Cost Policies approved upon IMM approval. PJM did not track Fuel Cost Policy approvals or consider any appeals to the IMM's determinations.

<sup>3</sup> See Fuel Cost Policies, New MIRA Module, Monitoring Analytics presentation to the PJM Markets Implementation Committee, June 7, 2017, <<http://pjm.com/~media/committees-groups/committees/mic/20170607/20170607-item-16b-imm-update-on-fuel-cost-policies-new-mira-module.ashx>>.

the IMM passed without discussing the policies with the Market Seller. PJM reviewed and approved every Fuel Cost Policy that failed the IMM's evaluation.

The standards for the IMM's market power evaluation are that Fuel Cost Policies must be algorithmic, verifiable and systematic, accurately reflecting the short run marginal cost of producing energy. In its filings with FERC, PJM agreed with the IMM that Fuel Cost Policies should be verifiable and systematic:<sup>4</sup>

- Verifiable: Must provide a fuel price that can be calculated by the IMM after the fact with the same data available to the Market Seller at the time the decision was made and documentation for that data from a public or a private source.
- Systematic: Document a standardized method or methods for calculating fuel costs including objective triggers for each method.<sup>5</sup>

PJM and FERC did not agree that Fuel Cost Policies should be algorithmic:<sup>6</sup>

- Algorithmic: Must use a set of defined, logical steps. These steps may be as simple as a single number from a contract, a simple average of broker quotes, a simple average of bilateral offers, or the weighted average index price posted on the Intercontinental Exchange trading platform ('ICE').<sup>7</sup>

It was evident during the Fuel Cost Policy review process that the two standards proposed by the IMM and agreed to by PJM and FERC, verifiable and systematic, were not consistently implemented in PJM's Fuel Cost Policy review. The natural gas Fuel Cost Policies failed by the IMM and approved by PJM are not verifiable and systematic.

To explain its standards to Market Sellers, PJM presented a slide (Figure 1). PJM's definition of "systematic and verifiable" also includes the definition of "algorithmic." An algorithm is a "step by step procedure for solving a problem."<sup>8</sup> PJM's explanation of a systematic and verifiable Fuel Cost Policy is correct. PJM's stated standards and the IMM's standards are the same.

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<sup>4</sup> Answer of PJM Interconnection, L.L.C. to Protests and Comments, Docket No. ER16-372-002 (October 7, 2016) ("October 7<sup>th</sup> Filing") at P 11.

<sup>5</sup> Protest of the Independent Market Monitor for PJM, , Docket No. ER16-372-002 (September 16, 2016) ("September 16<sup>th</sup> Filing") at P8.

<sup>6</sup> October 7<sup>th</sup> Filing at 12; February 3<sup>rd</sup> Order at P 57.

<sup>7</sup> September 16<sup>th</sup> Filing at P 8.

<sup>8</sup> See Merriam-Webster Dictionary (accessed May 22, 2017), which can be accessed at: <<https://www.merriam-webster.com/dictionary/algorithm>>.

**Figure 1 PJM's definition of systematic and verifiable<sup>9</sup>**

The slide features the PJM logo in the top left corner. The title 'Systematic and Verifiable' is centered at the top right. Below the title, the question 'What does that mean?' is asked. A bulleted list follows, detailing the requirements for a systematic and verifiable process:

- A series of steps that are followed to get to the creation of the cost-based offer
- These steps should have thresholds and triggers associated with them
- The steps should be able to be followed logically
- Explanations for liquid and poor liquidity markets should be defined
- An auditor should be able to follow the steps and arrive at the cost-based offer

At the bottom of the slide, there is a decorative footer bar with colored segments (green, blue, yellow, red, orange) and the text 'www.pjm.com' on the left, '4' in the center, and 'PJM©2017' on the right.

## Fuel Cost Policy Review Standard

Despite the discussion of the algorithmic, verifiable, and systematic standards in Docket ER16-372, the standards for Fuel Cost Policy approval included in the tariff revisions filed by PJM and approved by the Commission do not include the verifiable and systematic requirements for fuel cost calculations or the standards presented to PJM stakeholders as shown in Figure 1.<sup>10</sup>

PJM's compliance filing states that "PJM shall reject Fuel Cost Policies that do not accurately reflect the applicable costs, such as the fuel source, transportation cost, procurement process used, applicable adders, commodity cost, or provide sufficient information for PJM to verify the Market Seller's fuel cost at the time of the Market Seller's cost-based offer."<sup>11</sup>

PJM's revised tariff language states that "Fuel Cost Policies must:

<sup>9</sup> See PJM Fuel Cost Policy and Hourly Offers Filing, "PJM Presentation to the Market Implementation Committee" (March 8, 2017) <<http://www.pjm.com/~/media/committees-groups/committees/mic/20170308/20170308-item-07a1-fcp-update.ashx>> .

<sup>10</sup> February 3<sup>rd</sup> Order at PP 33–58.

<sup>11</sup> PJM compliance filing, Docket No. ER16-372 (March 6, 2017) at Revised Schedule 2, Section 2.3(a).

- i. Provide information sufficient for the verification of the Market Seller's fuel procurement practices, as further described below and in PJM Manual 15, and how those practices are utilized to determine cost-based offers the Market Seller submits into the PJM Interchange Energy Market;
- ii. Reflect the Market Seller's applicable commodity and/or transportation contracts (to the extent it holds such contracts) and the Market Seller's method of calculating delivered fossil fuel cost, limited to inventoried cost, replacement cost or a combination thereof, that reflect the way fuel is purchased or scheduled for purchase, and set forth all applicable indices as a measure that PJM can use to verify how anticipated spot market purchases are utilized in determining fuel costs;
- iii. Provide a detailed explanation of the basis for and reasonableness of any applicable adders included in determining fuel costs in accordance with PJM Manual 15;
- iv. Account for situations where applicable indices or other objective market measures are not sufficiently liquid by documenting the alternative means actually utilized by the Market Seller to price the applicable fuel used in the determination of its cost-based offers, such as documented quotes for the procurement of natural gas; and
- v. Adhere to all requirements of PJM Manual 15 applicable to the generation resource.”<sup>12</sup>

The actual PJM review process that was the basis for PJM’s approval of Fuel Cost Policies prior to May 15, 2017, was inconsistent with PJM’s public statements to stakeholders, inconsistent with the arguments made by PJM in the ER16-372 docket and inconsistent with PJM’s tariff revisions.

## **Review Process**

On May 12, 2017, PJM finalized approval of all submitted Fuel Cost Policies. Of the PJM approved policies, 89 percent of all units had a policy that passed the IMM’s evaluation. The remaining 11 percent failed the IMM’s evaluation because they did not accurately reflect the expected cost of fuel and were not algorithmic, verifiable, and systematic. The IMM provided PJM and Market Sellers timely input of its determination when policies failed the IMM’s evaluation. PJM did not discuss the IMM’s input with the IMM or provide an explanation for why PJM deemed the Fuel Cost Policies compliant despite the issues identified by the IMM. Failed Policies

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<sup>12</sup> PJM compliance filing, Docket No. ER16-372 (March 6, 2017) at Revised Schedule 2, Section 2.3(a)(i)-(v).

Nine of 132 parent companies had at least one Fuel Cost Policy that failed the IMM's evaluation. Two companies had failed policies not related to natural gas. The remaining seven companies had failed policies related to natural gas. The IMM passed policies for 84 percent of natural gas fired units in PJM.

## **Tariff Standards Not Met**

Not all Fuel Cost Policies approved by PJM met the standard of the PJM tariff. Not all Fuel Cost Policies approved by PJM are verifiable and systematic. Not all Fuel Cost Policies approved by PJM are algorithmic. The tariff standards that some Fuel Cost Policies did not meet were:

1. Accuracy: Reflect applicable costs accurately;
2. Procurement Practices: Provide information sufficient for the verification of the Market Seller's fuel procurement practices;
3. Fuel Contracts: Reflect the Market Seller's applicable commodity and/or transportation contracts (to the extent it holds such contracts);
4. Adders: Provide a detailed explanation of the basis for and reasonableness of any applicable adders included in determining fuel costs in accordance with PJM Manual 15.

## **Accuracy**

The IMM failed Fuel Cost Policies not related to natural gas submitted by some Market Sellers because they do not include the short run marginal cost of fuel at all. Some policies include contractual terms (in \$ per MWh or in \$ per MMBtu) that do not reflect the actual cost of fuel. The IMM determined that the terms used in these policies do not reflect the cost of fuel based on the information provided by the Market Sellers and information gathered by the IMM from similar resources.

The IMM failed the remaining Fuel Cost Policies because, in different ways, they do not accurately reflect the cost of natural gas. The main issues identified by the IMM in the natural gas policies were:

- Unverifiable cost estimates. Some of these policies include options under which the estimate of the natural gas commodity cost would be calculated by the Market Seller without specifying a verifiable, quantitative method. For example, some Fuel Cost Policies specify that the source of the natural gas cost would be communications with traders within the Market Seller's organization. A fuel cost from discretionary and undocumented decision making within the Market Seller's organization is not verifiable. Verifiability requires that fuel cost estimates be transparently derived from market information and that PJM or the IMM could reproduce the same fuel cost estimates after the fact by applying the methods documented in the Fuel Cost Policy to the same inputs. Verifiable is a key requirement of a Fuel Cost Policy. If it is not

verifiable, a Fuel Cost Policy is meaningless and has no value. Unverifiable fuel costs permit the exercise of market power.

- Use of available market information that results in inaccurate expected costs. Some Market Sellers include the use of offers to sell natural gas on ICE as the sole basis for the cost of natural gas. An offer to sell is often not an accurate indication of the expected fuel cost. The price of uncleared offers on the exchange often exceed the value of cleared transactions. Use of sell offers alone is equivalent to using the supply curve alone to determine the market price of a good without considering the demand curve. It is clearly incorrect.
- Use of unsupported natural gas hubs (indices). Some Fuel Cost Policies include hubs not related to the location of the unit, without an explanation or an analysis of the basis between the location of the unit and the proposed hub. Other Fuel Cost Policies do not include all the applicable hubs accessible to the units (e.g. units with access to multiple interstate pipelines). The use of a trading hub that is not applicable to the unit, or the failure to use a hub that is accessible to the unit, results in an inaccurate estimate of the cost of natural gas.
- Use of unsupported adders. Some policies include unsupported adders to the cost of natural gas that result in the overstatement of natural gas costs. The only legitimate role for adding additional cost to an indexed commodity cost of natural gas is to incorporate an empirically established difference between that posted price and the actual price of natural gas paid for supplying the unit. The IMM compared all proposed adders to the final published index to evaluate their accuracy. Market Sellers with policies that passed the IMM's evaluation either include no adders or include adders supported by empirical evidence.

The Fuel Cost Policies that failed the IMM's evaluation also fail to meet the standards defined in the PJM tariff. PJM should not have approved inaccurate Fuel Cost Policies.

## **Procurement Practices and Fuel Contracts**

The revised PJM tariff requires that Fuel Cost Policies provide sufficient information for the verification of fuel procurement practices and how those practices determine the cost of fuel used in calculating cost-based offers.<sup>13</sup> The IMM explained in responses to PJM and FERC that procurement practices may be used in the development of cost-based offers but are not necessary in the development of cost-based offers.<sup>14</sup> For example, many Market Sellers purchase fuel using long term firm contracts at prices that are, at times, below the daily replacement cost of fuel. In a large number of approved Fuel Cost Policies, the actual fuel

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<sup>13</sup> See PJM compliance filing, Docket No. ER16-372 (March 6, 2017) at Revised Schedule 2, Section 2.3(a)(i).

<sup>14</sup> See Protest of the Independent Market Monitor for PJM, ER16-372-001 (Sept. 16, 2016) at 39.

procurement process plays no role in calculating the Market Seller's accurate estimate of the daily replacement value of their fuel.

A large number of policies approved by PJM do not include fuel procurement information. Such policies passed the IMM's evaluation and PJM subsequently approved them. The IMM believes that Market Sellers should be obligated to provide information on fuel procurement practices only if it is relevant to the calculation of cost-based offers. Despite the inconsistency with the tariff, the IMM does not see a need for enforcement action on this issue. The IMM will continue to recommend that the tariff be changed to allow units to have Fuel Cost Policies that do not describe or provide information regarding fuel procurement practices, including fuel contracts when relevant. Fuel procurement practices, including fuel contracts, may be used as the basis for Fuel Cost Policies but should not be required.

## **Alternative Superior Standard Not Met**

PJM's filing proposed and the Commission accepted language that allows Market Sellers to deviate from the standards in the tariff if the Market Seller provides documentation showing that the alternative method to develop the fuel cost was superior to the tariff standards.<sup>15</sup>

No Market Seller used this provision to support their failure to follow the tariff standards for Fuel Cost Policies. The Fuel Cost Policies that failed the IMM's evaluation do not include any acknowledgment that the methods of calculating fuel costs did not adhere to the tariff standards, an appeal to consideration of the superior standard clause in the tariff, or an explanation showing that their methods were superior to those specified in the tariff. The IMM is not aware of any documentation from these Market Sellers to PJM showing that their approved Fuel Cost Policies meet this tariff requirement. In its determination, PJM did not specify that these Fuel Cost Policies were superior to the standard defined in the tariff.

## **Conclusion**

This initial memo is intended to timely inform PJM and PJM Stakeholders of the outcome of the Fuel Cost Policy review process to date. The IMM will file individual and confidential referrals regarding failed Fuel Cost Policies as applicable.

The February 3, 2017, FERC order recognized that the IMM's review remains unchanged and that the IMM will continue to review Fuel Cost Policies for market power and for tariff compliance.<sup>16</sup> <sup>17</sup> Consistent with this conclusion, the IMM continued its independent review

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<sup>15</sup> August 16<sup>th</sup> Filing at P 372.

<sup>16</sup> See February 3<sup>rd</sup> Order at P 68.

<sup>17</sup> See February 3<sup>rd</sup> Order at P 59.

of Fuel Cost Policies and provided the results of its evaluation to PJM and to Market Sellers.<sup>18</sup> The IMM reviews and continues to review Fuel Cost Policies to determine whether they raise market power issues. The IMM's market power review is separate from and does not depend upon the results of PJM's compliance review. It is possible for PJM to approve a Fuel Cost Policy that still creates market power issues. That has occurred. The Fuel Cost Policies failed by the IMM and approved by PJM do raise market power concerns. The IMM will bring specific cases to the attention of the Commission and the Office of Enforcement when offers create market power issues based on reliance on failed Fuel Cost Policies.

During PJM's first annual review of Fuel Cost Policies, commencing in June 2017, the IMM will provide consistent input to PJM and Market Sellers. The IMM expects substantial changes to some natural gas Fuel Cost Policies as a result of the fact that Market Sellers are now permitted to make flexible offers. The IMM will continue to recommend that Fuel Cost Policies be accurate and be algorithmic, verifiable and systematic. Fuel Cost Policies that do not meet these standards may be used to exercise market power. The competitiveness of the PJM Energy Market depends on meeting these standards.

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<sup>18</sup> *Ibid*